

Claims:

1. A hydroxamate composition for collection of minerals by froth flotation, the composition including an aqueous mixture of hydroxamate wherein the pH
5 of the composition is at least 11.
2. A hydroxamate composition as in claim 1 wherein the pH of the composition is in the range of from 11 to 13.
- 10 3. A hydroxamate composition as in claim 1 wherein the pH of the composition is in the range of from 11.5 to 13.
4. A hydroxamate composition as in claim 1 wherein the pH of the composition is in the range of from 12.0 to 12.5.
- 15 5. A hydroxamate composition according to in claim 1 wherein the hydroxamate is a fatty hydroxamate.
6. A hydroxamate composition as in claim 5 wherein the fatty portion of the
20 fatty hydroxamate has a carbon chain length in the range of from 6 to 14 carbon atoms.
7. A hydroxamate composition according to claim 6 wherein the fatty portion has a carbon chain length in the range of from 8 to 12 carbon atoms.
- 25 8. A hydroxamate composition according to claim 7 wherein the fatty portion has a carbon chain length of 8 or 10 carbon atoms, or mixture thereof.
9. A hydroxamate composition according to claim 8 wherein fatty portion of
30 the fatty hydroxamate is sourced from fractionated coconut and palm kernel oil.
10. A hydroxamate composition according to claim 8 wherein the composition is essentially free of water insoluble solvents.

11. A hydroxamate composition according to claim 10 wherein the composition contains less than 5% w/w of fatty acid impurity.
12. A hydroxamate composition as in claim 11 wherein the counter ion is sodium, potassium or a mixture of sodium and potassium.
13. A hydroxamate composition as in claim 11 wherein the counter ion is present in excess.
14. A hydroxamate composition according to claim 11 wherein the concentration of the hydroxamate is in the range of from 1 to 60% by weight of the aqueous mixture.
15. A hydroxamate composition according to claim 1 wherein the concentration of the hydroxamate is in the range of from 5 to 50% by weight of the aqueous mixture.
16. A hydroxamate composition as in claim 11 wherein the composition is formulated as a paste comprising 30 to 50% parts by weight of alkali metal hydroxamate and 50 to 70% parts by weight water and optionally, other components.
17. A hydroxamate composition according to claim 14 further comprising hydroxylamine in an amount of up to 1% by weight of the total hydroxylamine composition.
18. A method of collecting mineral values from an aqueous ore slurry by froth flotation, the method comprising the step of adding an aqueous hydroxamate composition to the aqueous ore slurry wherein the pH of said aqueous hydroxamate composition is at least 11.
19. A method of froth flotation of minerals from ore comprising:
- (i) forming an aqueous slurry of the ore;
 - (ii) optionally adjusting the pH of the slurry;

- (iii) adding to the slurry an aqueous composition of fatty hydroxamate of claim 1;
 - (iv) agitating the slurry to mix and condition the fatty hydroxamate and ore slurry;
 - 5 (v) adding a frothing agent to the slurry;
 - (vi) agitating the slurry to form a froth containing floated minerals; and
 - (vii) removing the froth and collecting the floated minerals in the presence of the hydroxamate.
- 10 20. A method of collecting mineral values as in claim 18 or claim 19 wherein the fatty hydroxamate has a carbon chain length in the range of from 8 to 12 carbon atoms.
21. A method of collecting mineral values as in claim 18 or claim 19 wherein
15 the counter ion present in the hydroxamate salt is an alkali metal.
22. A method of collecting mineral values as in claim 18 or claim 19 wherein the counter ion is sodium, potassium or a mixture of sodium and potassium.
- 20 23. A method of collecting mineral values as in claim 18 or claim 19 wherein the counter ion is present in excess.
24. A method of collecting mineral values as in claim 18 or claim 19 wherein the amount of hydroxamate reagent is in the range of 0.1 to 500 g per tonne of
25 ore.
25. A method of collecting mineral values according to claim 18 or claim 19 wherein the hydroxamate composition is added to the slurry as a dilute solution of concentration in the range of from 1 to 30% of hydroxamate salt by weight of
30 the total aqueous hydroxamate composition and preferably mixed for at least 30 minutes before use.

26. A method according to claim 25 wherein the dilute solution of hydroxamate is prepared by diluting a hydroxamate composition with aqueous alkali metal hydroxide.
27. A method according to claim 26 wherein the hydroxamate is diluted with
- 5 1% KOH solution.